UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,200	09/09/2004	Hermann Schomberg	DE 020067	4901

24737 7590 01/19/2007

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
MIDKIFF, ANASTASIA	
ART UNIT	**PAPER NUMBER**
2882	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/507,200	SCHOMBERG, HERMANN	
	Examiner	Art Unit	
	Anastasia Midkiff	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 September 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent to Caugant et al. (USP# 4,541,293) in view of U.S. Patent to Roos et al. (USP# 6,075,837).

With respect to Claims 1, 10, 11, and 15, Caugant et al. teach an x-ray apparatus, and method for its use, which includes:

- an X-ray source (124) for the emission of an X-ray beam (Figure 2);
- an X-ray detector (125) for the multiple detection of X-rays after their passage through an object to be examined (Column 1 Lines 18-30), being arranged on an object axis (Figure 2), while the X-ray source and detector are displaced along a trajectory (Column 5, Lines 16-48);
- means (123) for changing the position of the X-ray detector relative to the X-ray source along an axis of alignment of the detector with the source (Column 6, Lines 48-51); and,
- a control unit (11) for displacing the X-ray source and the X-ray detector along the trajectory (Column 3 Lines 61-68, and Column 4 Lines 1-2) and

for controlling rotationally on a central axis of said beam orientation of the X-ray detector during the detection of X-rays (Column 6, Lines 19-28).

Caugant et al. do not specifically teach that said source emits a conical beam or a computer readable medium for performing said method.

Roos et al. teach an x-ray apparatus wherein a cone-beam x-ray source (100, and Column 2 Lines 42-44) and a flat-panel digital detector (110) is used to obtain computerized tomography images of a patient (Column 1, Lines 66-67), said cone-beam and digital flat-panel receptors being known to provide large-area, volume CT images quickly, with lower radiation dose to patient, and with improved spatial resolution of images generated.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the cone-beam source and flat-panel digital detector of Roos et al. in the apparatus and method of Caugant et al., to obtain volume CT images of high quality in an efficient manner, with minimum time and discomfort to the patient.

With respect to Claim 2, Caugant et al. teach an x-ray apparatus, and method for its use, which includes:

- an X-ray source (124) for the emission of an X-ray beam (Figure 2);
- an X-ray detector (125) for the multiple detection of X-rays after their passage through an object to be examined (Column 1 Lines 18-30), being arranged on an object axis (Figure 2), while the X-ray source and detector are displaced along a trajectory (Column 5, Lines 16-48);

- means (123) for changing the position of the X-ray detector relative to the X-ray source along an axis of alignment of the detector with the source (Column 6, Lines 48-51);
- a control unit (11) for displacing the X-ray source and the x-ray detector along the trajectory (Column 3 Lines 61-68, and Column 4 Lines 1-2) and for controlling the position and/or the orientation of the X-ray detector during the detection of X-rays (Column 6, Lines 11-33);
- wherein the detector is rotatable around the connecting line extending between the focal point of the X-ray source and the center of the X-ray detector (Column 6, Lines 19-28);
- the control unit for controlling the orientation of the X-ray detector being constructed in such a manner that one of the edges of the X-ray detector is always situated at right angles to the object axis while the trajectory is being completed (Column 6, Lines 43-47).

Caugant et al. do not specifically teach that said source emits a conical beam, or that detector is a flat, rectangular detector.

Roos et al. teach an x-ray apparatus wherein a cone-beam x-ray source (100, and Column 2 Lines 42-44) and a flat-panel digital detector (110) is used to obtain CT images of a patient (Column 1, Lines 66-67), said cone-beam and digital flat-panel receptors being known to provide large-area, volume CT images quickly, with lower radiation dose to patient, and with improved spatial resolution of images generated.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the cone-beam source and flat-panel digital detector of Roos et al. in the apparatus and method of Caugant et al., to obtain volume CT images of high quality in an efficient manner, with minimum time and discomfort to the patient.

With respect to Claim 3, Caugant et al. further teach that control unit is arranged to adjust the orientation of the X-ray detector prior to the beginning of the completion of each trajectory in such a manner that one of the edges of the x-ray detector is situated at right angles to the object axis (Column 6, Lines 43-62) and that the orientation of the X-ray detector is kept constant while the trajectory is being completed (Column 6, Lines 43-47).

With respect to Claim 4, Caugant et al. further teach that control unit is arranged to adjust the orientation in response to any change of the position of the X-ray source while a trajectory is being completed (Column 4, Lines 43-62).

With respect to Claims 5 and 8, Caugant et al. teach an x-ray apparatus, and method for its use, which includes:

- an X-ray source (124) for the emission of an X-ray beam (Figure 2);
- an X-ray detector (125) for the multiple detection of X-rays after their passage through an object to be examined (Column 1 Lines 18-30), being arranged on an object axis (Figure 2), while the X-ray source and detector are displaced along a trajectory (Column 5, Lines 16-48);

- means (123) for changing the position of the X-ray detector relative to the X-ray source along an axis of alignment of the detector with the source (Column 6, Lines 48-51);
- a control unit (11) for displacing the X-ray source and the x-ray detector along the trajectory (Column 3 Lines 61-68, and Column 4 Lines 1-2) and for controlling the position and/or the orientation of the X-ray detector during the detection of X-rays (Column 6, Lines 11-33);
- wherein the means for changing the position and/or orientation of the X-ray detector are constructed in such a manner that the angle between the central ray of the x-ray beam and the connecting line between the focal point of the source and the center of the detector can assume a value other than zero (Column 6, Lines 11-33); and,
- wherein the control unit is constructed in such a manner that at least two angular positions are adjusted during the detection of x-rays (Column 5 Lines 37-48, and Column 6 Lines 47-62).

Caugant et al. do not specifically teach that said source emits a conical beam and that detector is a flat, rectangular detector.

Roos et al. teach an x-ray apparatus wherein a cone-beam x-ray source (100, and Column 2 Lines 42-44) and a flat-panel digital detector (110) is used to obtain CT images of a patient (Column 1, Lines 66-67), said cone-beam and digital flat-panel receptors being known to provide large-area, volume CT images quickly, with lower radiation dose to patient, and with improved spatial resolution of images generated.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the cone-beam source and flat-panel digital detector of Roos et al. in the apparatus and method of Caugant et al., to obtain volume CT images of high quality in an efficient manner, with minimum time and discomfort to the patient.

With respect to Claims 6 and 12, Caugant et al. further teach that the detector is arranged on one or more track rails (127, 156) in order to change its position and/or its orientation (Column 6, Lines 48-62).

With respect to Claim 7 and 13, Caugant et al. teach that the track rail (127) extends essentially perpendicularly to the central ray (Figure 2), notably a track rail which is curved around the focal point of the x-ray source (Figure 2).

With respect to Claim 9, Caugant et al. further teach that the control unit is arranged for the multiple displacement of the X-ray source along a trajectory during the irradiation of the object to be examined (Column 5, Lines 26-36) and for a different angular position of the X-ray detector during each completion of the same trajectory (Column 6, Lines 48-62).

With respect to Claim 14, Caugant et al. further teach a conical examination zone (Column 6, Lines 28-33).

With respect to Claims 16-20, Caugant et al. further teach that detector is a flat, non-square detector (125, Figure 2) configured for rotation around the connecting line extending between the focal point of the x-ray source and the center of the detector (Column 6, Lines 19-28), the control unit for controlling orientation of the x-ray detector being constructed in such a manner that one of the edges of the X-ray detector is

always situated at right angles to the object axis (Column 6, Lines 43-62) while the trajectory is being completed (Column 6, Lines 43-47).

Response to Arguments

Applicant's arguments filed 10 November 2006 have been fully considered but they are not persuasive.

With respect to the rejections of Claims 1, 10, 11, and 15, as being unpatentable over US Patent to Caugant (US 4,541,293) in view of US Patent to Roos (US 6,075,837), the Applicant asserts that Caugant does not teach "a means for changing the position *and/or* orientation of the x-ray detector relative to the x-ray source." The examiner respectfully disagrees.

As cited in the above rejection, Caugant teaches a means for changing the position of the detector (receiver 125) with respect to the source (124), as Caugant teaches "displacing the receiver with respect to the patient along its axis of alignment with the source" (Column 6, Lines 50-51) along slide tracks (156) which are parallel to said axis (Figure 2) to allow magnification or enlargement of a radiological view (Column 6, Lines 48-51).

Therefore the above rejections of Claims 1-20 are maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anastasia Midkiff whose telephone number is 571-272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ASM
1/5/07

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER